

Rachna Korhonen, U.S. sales director for Sonera Mobile Pay. Sonera processes the wireless payment for the "few thousand" users, who store their credit card information at the company.

The service charges a "small," undisclosed transaction fee to consumers and merchants, but Korhonen says that the 25 to 40 percent rise in the use of wireless payment-enabled services points up the success of the project so far. She adds that Sonera is looking to expand soon, offering services in Europe that would allow consumers to buy even more expensive goods, like airline tickets. Sonera is actively looking to license Mobile Pay in the U.S.

Operators aren't the only ones well positioned to take their place in wireless payments. With the help of Trintech's Payware, Korean electronics giant Samsung has created a "virtual credit card," an extension

of its \$15.7 billion traditional credit card business, one of the biggest in Korea. Given the explosive growth of m-commerce in Asia, Samsung could become a huge force in wireless payments there.

Despite limitations, the wireless-payment infrastructure is likely to grow, fueled by the proliferation of mobile devices and consumers' ever-growing desire to buy things whenever and wherever they like.

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→ A day in the life of the virtual builder. (computers in housing development)(includes related articles)(Advertisement: Computer Connection)

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Abstract

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ABSTRACT: A scenario of a highly automated home built by a modern housing developer is described. The energy-efficient, intelligent home features

microprocessor-programmed elements such as motion detectors, water heaters, coffee makers, synthesized audio reports of E-mail messages, business news summaries, electronic newspapers, home business equipment, computer-aided design equipment and virtual reality systems for architectural plans.

TEXT:

Technology is changing by the minute. Just how will we be doing business in the next few years? Spend a day with the virtual Builder and see.

What is the future of computers and how will they be used? Bill Gates of Microsoft cast his company's goal in a bronze plaque studding the plaza of his corporate headquarters: "A computer on every desk of every home."

Indeed the advent of handy electronic access to everything and anything from the O.J. trial to on-line shopping is driving a consumer feeding frenzy in the personal computer market. There are, by some reports, 20-million people on line right now.

So many consumers, who have never used a computer, are rushing to purchase that tech support crews of major computer companies are being retooled to guide new users. Many of these new owners don't know one end of a printer cable from another. But they are ready to learn.

Though many more consumers will use their powerful machines to play popular graphics games like "DOOM" and chat on line than will use them for accounting, their use of computers is going to breed expectation. And just as the television forced all commercial videos to meet high production standards so will the ubiquitous in-home computer breed the expectation of 3-D presentation and virtual reality for any enterprise using them as a selling tool.

How will these rapid changes affect builders? The changes cannot be over estimated. They are truly of the magnitude brought about by the introduction of electricity and the advent of the telephone. Today, it's hard to even imagine a home without electricity or telephone service. Let alone sell one.

The information superhighway is here now and access is easy and cheap. Windows 95, the new Microsoft operating platform, now expected to arrive in August, includes built-in programs to access that highway. Microsoft will offer its own service company. IBM's OS/2 Warp already delivers this integrated capability. Already access to the information superhighway costs only as much as monthly telephone or cable television service, and there are more on-line service providers than long-distance telephone service vendors. And even some of these are merging into multi-service utilities.

In our last issue of the Computer Connection we spoke with experts

throughout the country about the current state of computer use among builders. We also shared the results of NAHB's 1994 Builder Computer Study.

This time we will take you along on a journey that almost is - a day in the life of a virtual builder who will, in very short order, be you.

Everything we describe is available today (for a price) somewhere in the country.

So let's start at home. Of course, our virtual builder lives in an energy efficient, intelligent home that she or he built.

Facing an early start, he programmed the home to wake up at 5:30 a.m.

As we enter the home to begin our day of observation, kitchen and bathroom

lights are ramping up to 50 percent light intensity and music has started

to play on the whole-house surround system. Coffee is perking and the plumbing system has the shower water heated to 101 degrees and ready to go,

once sensors pick up the movement of our builder into the room, Oh, and the

mirror-heater has turned on to prevent condensation.

As our builder enters the master bathroom, he hears the computer's synthesized voice announce the temperature inside the house and outdoors and delivers a local and job site weather report, as well as the status of

the home security system. It also announces that he has several E-mail messages.

As he brushes his teeth, the computer reads the time and duration of

each message and replays the recorded messages aloud. One is from a client

scheduled to come for an early a.m. meeting confirming their arrival time.

A few are queries for information from an advertisement on the Internet.

With these latter messages, he responds by telling the computer to E-mail information packages to those potential buyers. The package includes

an electronic prequalifier that will, with recipient authorization, allow

access to financial and credit reports that pre-qualify the buyer, he also

tells the computer to insert a schedule reminder to follow up the packages

with a video-phone call in three days (in which both parties can see themselves and the person they are talking to via the use of a camera and

speakers attached to the PC.)

He instructs the computer to scan his daily schedule and based on the

schedule and the weather print out an appropriate wardrobe.

With no emergencies pending he finishes dressing and heads into the kitchen for breakfast. At the kitchen table, our builder pulls forward a television screen and pulls up the daily paper. He then pulls up a personalized news summary culled from a variety of on-line services, including the Associated Press and Reuters. The Highlighted words within

the features, both locally written and those gathered from nationwide new services, lead to more information about the feature - everything from the transcripts of speeches and reports the reporters used in compiling a report story to financial tables and annual reports in the money section plus "links" to other points on the Internet for more information on the subject.

The "paper" reports on a fire raging in the northwest and some recent court decisions that give the feeling that lumber prices are about to rise again. Our builder quickly scans the builders' on-line forums and chat rooms to see what the rest of the market thinks - about half think lumber's going up, and some 25 percent are switching to other framing systems such as steel. He makes a note to E-mail the purchase order for the lumber for that new custom home today to lock in the price. And to modern the plan he will be working on today over to his steel-framing sub to bid out the new job in steel.

Having perused the "paper" and keyed in a reminder to order the lumber and steel specs, he heads to his home office. A few buttons on the touch screen re-set the house to an "unoccupied" mode that conserves energy and arms the security system.

A combination of motion detectors and timers has turned off lights and appliances in the main house and has awakened the home office. The lights and music are on as he walks into the two-room suite attached to the main house.

He dons his wireless 3-D video headset/telephone and uses voice recognition to command the computer to call the architect of one potential client who delivered a set of concepts and renderings yesterday. The architect quickly E-mails detailed plan information and our builder inserts the information via "drag and drop" into his computer estimating system.

In minutes, the computer spews out bills of materials and a list of potential subs. He E-mails the relevant specs to the appropriate subs. Though only a few are on line, his on-line service provider automatically FAXes the rest.

In just a few hours, he will E-mail his bid to the clients who are choosing among three builders' estimates. Our builder is confident, because he knows this electronic bid will be both the first and most complete that these potential customers receive - the one they use to measure the competence and professionalism of the competition.

It's still a few minutes before the new clients will arrive. Our

builder E-mails another client's plans to the building inspector for approval. Because this is a custom-home in an area with height limitations and architectural restrictions, the transmission includes a three-dimensional presentation of the home as it will appear from a distance, driving up to the site and from other homes in the subdivision, and includes a walk-through inside the home fully colorized with views.

Right on time, 8:00 a.m., the new clients show up. These clients want our builder to both design and build their home. Since they know he is electronically literate, they have brought along cam-corder tapes of homes

they like and features they wish to incorporate.

They go immediately to the computer conference table. First our builder gets a sense of the size and living attributes of their present home. What features work for them now? What would they change?

Our builder offers them the option of choosing a house plan available for a modest fee via CD-Rom or pulled off a service on the Internet, but these clients want a truly custom home. Our builder breaks the design process into a series of design modules. What do they want in the master suite module, or the kitchen? They quickly scan in views of the site from

the digital cam-corder tapes that indicate topography and vegetation. Since

the clients included surveyors poles as they panned the site, its a simple matter to generate a full topological map of the site verified through satellite imagery pulled down from an on-line provider. Our builder also links the topo with the county's geological information system to add accurate elevations and survey boundaries.

Based on local code requirements, our builder quickly sets the parameters for the site's allowable building envelope and flags some trees

the owners wish to save which may effect the home design.

He has also incorporated seasonal sunrise and sunset times and solar loads to orient windows and optimize energy balance.

Grouped around the computer screen, the clients and builder outline the house by use modules, then refine the design. Soon, they are walking through several alternative new homes right on the computer.

They can "walk around" the home's exterior, peer into windows from the outside, walk in the front door, look up at the ceiling, look out the windows at the views and chart the sun's path through windows at different times of the year.

Using images from the digital cam-corder, they move the owners' furniture and art work into place. It takes two or three of these sessions to totally complete the design. At the last session, they can even add and "age" landscaping. Based on site information and climate data already in the computer, the owners can not only choose the plants that will do well around their new home (the landscape program will let them know if a

particular species will work or not), but also see them as they will look at maturity. Realizing that several of the plants they like are slow growers and will take a long time to mature, the clients decide to purchase larger plant specimens of the slow growers.

Let's try this with the virtual reality glasses, our builder says.

In moments builder and clients enter the conceptual home to walk through corridors, to check out the kitchen-cabinet layout and admire the sunset views by the pool.

Shall we print this one? Our builder asks.

He then prints to videotape the 3-D walkthrough and sends the clients home to think about their dream home. It is only 10:30 a.m. Two more sessions like this and he will have complete estimates, specifications, and contracts in hand and the clients will really feel they have been a part of the total design process.

Next our builder calls one of the job sites. The super has just received an order from the lumber yard and is checking the inventory against the purchase order using bar codes and a pen-based computer, a personal digital assistant (PDA). Inventory is a snap - the original purchase order sent via E-mail to the lumberyard's computer spelled out every-item in quantity that was based on the job. The super has that same purchase order accessible in the pen-based computer.

The super has also bar coded the electrical and plumbing fixtures and appliances with anti-theft tags. Now part of the home's database, the information on model type and its care will be part of the homeowner's dream book complete with digital progress photos and a maintenance binder all printed out in time for closing. In the word-of-mouth custom home market, our builder gets 50 percent of business from direct referrals, 30 percent from those touring the model and the remaining 20 percent from electronic advertising.

The super has also logged in weather conditions, which subs are on site and is ticking off the progress on the construction schedule, all in the pen-based computer. The order is accurate and everything is on schedule. The super E-mails the office authorizing payments to the lumberyard, with electronic "carbon copy" to the builder's office.

The super also accesses an OSHA bulletin board which lists the latest rules and regulations. The super carefully logs the use of safety equipment, reminds one of the subs to wear a hard hat and prints up several notices about new regulations to post on the job site.

A review of the project schedule for that home reminds our builder that several of the subs are due payment today. Our builder teleconnects with his office manager (who works in her own home office), who then electronically makes payment from that job's escrow account at the bank to

the appropriate subs. For most the bank simply direct deposits the sums to their accounts. The office manager notes the receipts and the times and E-mails the subs notification of payment. She also prepares the weekly variance sheets which compare each job's progress with its budget and schedule.

At 11:00 a.m. the next client arrives. These customers have already been through the design process - now it's time to help them get their construction loan and sign the contract to actually build their home.

Our builder tells them, that based on reports in the morning paper and some peer review he thinks lumber prices may rise and change the cost of building their home. He says, that with their permission, he would like to rebid the home using steel framing rather than lumber. They agree to the change. He then modems the framing plan to the local steel framing sub who quickly bids it out while the clients continue with the meeting.

At this point they all sit around the computer conference table and "call" the banker to tele-conference. The banker helps them fill out the electronic loan application. He verifies employment and credit records electronically. At 11:30 a.m., the banker then congratulates them on their loan approval and sets up the escrow account for construction payouts. Banker, builder and clients review the schedule, bids and estimates all prepared in the computer.

The steel-framing sub calls back with his bid and a firm price; our builder and the owners change the plans to reflect the material change.

How long did this take the old fashioned way, the clients ask? Well a minimum of several weeks for final loan approval, says the banker. Often it takes a month or more to design a house with pencil and paper and another 40 to 60 hours to do estimates and take-offs without a computer, our builder says. Of course the computer saves time from this point on as well, since all of the scheduling, tracking and accounting procedures are now in the computer tied to this job.

Wow, this is our third meeting. We've spent a total of five hours with you designing and specing the house. We have three-dimensional pictures and video tapes of how it will actually look, and now we also have loan approval - that's amazing.

Yes, our builder says, the process is fast, but I schedule appointments a week apart so that you don't feel too rushed in the decision making process. We could actually go through the whole process in less than a week, but I think you need time to digest the information and be sure the house looks like and works as well as you really want.

When these clients leave, our builder checks the progress of the six

homes currently under construction. Double-checking ensures that there are no conflicts created by adding the new home to the schedule. Part of the computerized estimating process is to send spec lists to subs and to make sure they are available during the appropriate time frame. The program tracks on-time performance and flags subs whose performance or timing slows the job down.

Our builder also has programmed a time cushion for inevitable delays due to weather, illness or delays in materials acquisition and delivery. With computerized scheduling, delays happen less often than they used to, but our builder cannot control the weather and feels that it is better to deliver a house a little early rather than late. (Though even weather trends can be factored into the construction schedule using on-line weather-service data).

Next, it's time to launch the new model home in a prestigious subdivision. The customized model has been fully furnished, and our builder is hosting a catered luncheon for prospective clients and Realtors.

He found the caterer and approved the menu through the Internet, but taste-tested food samples before sealing the deal. The model also allows buyers to taste test. Virtual reality is not hands-on reality and the model still gives potential buyers a place to touch the product.

Our builder grabs the car keys and taps the "goodbye" mode on the touch-screen. The temperature adjusts, the music and lights turn off.

As driveway sensors respond to the car's departure, the home and office security system alarms are set and calls are transferred to the office manager's home office. As our builder drives to the model, he reviews more E-mail and voice messages. He then returns phone calls using a voice activated dialer and dictates E-mail responses.

At the model, our builder takes digital photographs of the model. Everything in the model has been bar-coded. A kiosk at the exit of the sales center near the garage works just like those in retail stores to catch those sticky-fingered model home visitors. Our builder used to plan on re-accessorizing quarterly and still does for breakage and wear. Monitoring the model proved that actual losses exceeded the cost of alarming for theft.

Other sensors at each entry to the project deter materials theft. Remote cameras installed at the project's gates scan license plates and sound an alarm if they sense the bar-coded merchandise inventory tags.

Everything is in place, the on-site sales person and the caterer are ready for guests. This sales office is networked to the main office computer. Semi-custom plans and virtual reality glasses allow interested buyers to tour other available models and to make extensive changes. But most are captivated by videotape walkthroughs on the 100-inch projection wall television in the sales center.

A video display in the sales center illustrates the home building

process. Thus our builder is able to make one model do the work of three or four at much lower cost.

Prospects use the pen-based computer to fill out "qualification cards" that instantly go into the computer database for tracking. Software in the sales center reminds the on-site sales person to send thank-yous and follow up information.

As the luncheon winds down, our builder checks his schedule on his personal digital assistant. He has a zoning meeting this evening.

Back at the office, he quickly prepares the evening's presentation. At issue is a small private subdivision on slightly smaller lots than the 3.3-acre zoning previously approved in the area. Nearby residents are worried about density, about cutting off their views and about preserving a riparian habitat.

Our builder superimposes the digitized land plan onto the plot plan of the new subdivision. Then he adds homes designed to fit area architectural guidelines and colors with the caveat that this is a custom home subdivision so that actual designs may vary from those shown.

At the zoning meeting, our builder shows the video tape and answers questions. At one point a suspicious homeowner points out that this virtual reality stuff looks really good, but how do we know that you are really going to build this way?

I'm glad you asked that, our builder says, and cues up the digital tape to show similar-size homes on digital tape in the design phase and how they actually look as built. The tape even includes interviews with the home owners.

After the meeting, several of the neighbors ask our builder how they go about buying one of the new homes.

It's 9:00 p.m. Our builder heads home. Phoning home, he tells the spa to heat up and starts some music. Driveway sensors recognize the sensor in our builder's car: the walk-way lights come on, the garage door opens. It's been just another day in the life of the virtual builder.

RELATED ARTICLE:

5:30 am

Home is programmed to wake-up. Kitchen and bathroom lights come on and coffee begins to perk.

6:00 am

As he brushes his teeth, the computer reads the time and duration of each E-mail message

7:00 am

At the kitchen table he pulls forward a television screen and pulls up

the daily paper.

8:00 am

Right on time, the new clients show up. Our builder will both design

and build their home. They head for the computer conference table.

8:15 am

He offers the clients the option of choosing a house plan available via CD-Rom or pulled off a service on the Internet. Our builder breaks the design process into a series of design modules.

8:45 am

Grouped around the computer screen, the clients and builder are soon

"walking" through several new homes right on the computer.

9:15 am

Donning virtual reality glasses, the builder and clients enter the conceptual home to walk through, check out the kitchen cabinet layout and admire sunset views by the pool.

10:30 am

Our builder prints to videotape the 3-D walkthrough and sends the clients home to think about their dream home.

10:50 am

Our builder is reminded that several of the subs are due payment. He tele-connects with his office manager who then electronically makes payment to the subs.

11:00 am

The next client arrives. It's time to help them get their construction loan and sign the contract to actually build their home.

11:30 am

They all sit around the computer conference table and "call" the banker to tele-conference. He verifies employment and credit records electronically. He then congratulates them on their loan approval.

12:00 pm

It's time to launch the new model home in a prestigious subdivision.

Our builder grabs the car keys and taps the "goodbye" mode on the screen.

The music and lights turn off.

12:30 pm

Everything at the model is in place. Semi-custom plans and virtual reality glasses allow interested buyers to tour other models and to make extensive changes.

1:00 pm

Prospects use the pen-based computer to fill out "qualification" forms that instantly go into the computer database for tracking.

2:30 pm

Our builder prepares for a zoning meeting later that evening. Nearby

residents of a subdivision going in are worried about density cutting off

their views and interfering with a riparian habitat.

4:00 pm

Builder superimposes the digitized land plan onto plot plan of the new subdivision. He adds homes designed to fit area architectural guidelines.

7:00 pm

At the zoning meeting, our builder shows the video tape and answers questions. He then shows similar-size homes on digital tape in the design phase and how they will actually look built.

9:00 pm

Our builder heads home. He phones home and tells the spa to heat up and starts music. Walkway lights come on, the garage door opens. Another day in the life of the virtual builder.

RELATED ARTICLE: Learn to Draw Plans On Your Computer In An Evening
Builder William Schulte had already looked at a few of the architectural drafting programs before he settled on Home Plan Pro.

Schulte, Schulte Construction Inc., Venice, Fla., found other programs to be too complex and too expensive. With only a few years of computer use under his belt, Schulte wanted design and drafting software that was affordable and easy to use. Schulte Construction builds five to six homes a year in the \$150,000 to \$200,000 price range.

With Home Plan Pro, Schulte found that it took him only one evening to learn the program.

Home Plan Pro automatically dimensions drawings. It is easy to create a complicated detail, save it and insert it where needed in the drawing. Schulte can also re-size, rotate and reverse drawings. And because it's now so easy to add doors, change floor plans and customize his homes, Schulte finds he is actually spending a little more time to design a better home.

Another added benefit is that it gives Schulte a professional-edge with his competition because homebuyers think his plans are more professional.

RELATED ARTICLE: CDCI's Profit Builder Saves Time And Money

Office manager Beth McKnight didn't know much about accounting when she joined Dick Ferrell Contracting Inc. (DFCI), Rock Hill, S.C. And what was in store for her could have been overwhelming.

But now, in just a few hours a day, she does all of the accounting for this remodeling business which generates a half million dollars in annual revenue. In fact, computerization has made the company so efficient that McKnight is one of only three employees including owner Dick Ferrell.

McKnight uses Profit Builder CFO, job cost and accounting software from CDCI Construction Data Control Inc. The company moved up from CDCI's Basic Builder two years ago to get Multi-user capability.

A two-day training workshop gave her the information she needed to start using the software. Since she started from ground zero, McKnight had

no bookkeeping background and didn't know the terminology such as debit, credits and general ledger. It didn't matter. Now she keeps track of accounts payable, payroll and job costs and produces weekly variance reports on each job.

Profit Builder can track up to 99 companies with up to 99 users in a LAN (local area network) environment. And Profit Builder tracks all kind of jobs. DFCI specializes in kitchens and bathroom remodeling but also does room additions and light commercial. Projects last year included a restaurant remodeling and an addition to a 125 year old house. Without Profit Builder, the company would need a production coordinator, a secretary and a bookkeeper. McKnight says computerization gives her plenty of time to do all three functions as office manager.

Ferrell sells the jobs and produces the budget on his computer in his home office. Then he brings the disk to McKnight, who integrates it into the job cost module. She keeps the report in a three- ring binder to track the progress of each job. Currently, McKnight is tracking eight jobs in various stages of completion.

April concluded DFCI's fiscal year. And this year was the second time McKnight prepared the year-end reports using Profit Builder. "This year, it was all very easy," she says.

RELATED ARTICLE: SolidBuilder Gives Homebuyers Three-Dimensional Views

I have a vision of changing the way we do business," says builder John Lindstrom, Lindstrom Builders, La Honda, Calif.

Homebuyers often find the home building process frustrating - slow, expensive - and they don't understand 2-D plans well enough to visualize the finished home.

After studying the market Lindstrom chose Computer Integrated Building's SolidBuilder. Why? "I needed computer-aided design that was easy-to-use and produced a complete materials and bidding list." SolidBuilder is a completely integrated 3-D solid modeling, building design

(CAD), estimating software. Now, when customers come in rather than it taking 40 to 80 hours to size up their plan or design one and cost it out,

Lindstrom schedules just a few sessions to design and bid the house.

In two-to three one-and-a-half-hour long appointments (billed at \$50 an hour) clients design their dream homes. They sit with Lindstrom at a 21-inch color monitor and design and "walk through" the home.

SolidBuilder's 3-D set up makes it easy for homebuyers to look out from inside the home to see views as they will be from their windows or from outside they can look into the home. They can even test fit their furniture, belongings and cabinets before the design is complete.

After each session, clients walk out with 8 1/2 x 11-inch print-outs to study at home. When the design is complete, it takes just two or three

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ABSTRACT:

Electronic commerce on mobile devices is expected to grow rapidly, with Ericsson predicting a \$120 billion m-commerce market by 2008. Banks, telecom carriers, transaction-processing software vendors, payment service providers and retailers are all scrambling to determine how to enable consumers to make payments on cell phones and PDAs. 'Beamed' payment sends instructions authorized by a user's password or PIN from a wireless device to a point-of-sale terminal. Wireless-enabled versions of conventional Internet e-commerce sites are more popular. Developers are emphasizing server-based wallets containing pre-authorized accounts as the most secure payment method. Other methods include authorizing payment via smartcards or adding the purchases to the user's mobile-phone bill, but neither system has become popular in the US. American E-commerce players only recently began to consider wireless payment infrastructures. Several companies are testing the technology, but adoption rates remain low.

TEXT:

THERE'S MUCH MORE TO SHOPping on the go than translating the fixed Internet to wireless. So as wireless usage takes off, more and more banks, the telecommunications carriers, transactions software and service providers, device manufacturers, and retailers are scrambling to figure out how to best enable mobile payment methods for consumers--along with what is in it for them when they do.

"It is absolutely critical that companies have mobile commerce on the road map," says Julie Ferguson, vice president of emerging technology at ClearCommerce, which sells software that automates transaction processing over the Internet. "It's just like the Web of five years ago."

The notion of "beaming" a payment for a soda or wirelessly purchasing a pair of airline tickets with the mere push of a cell phone button is more than just an appealing way to lure a consumer into a purchase. Mobile-payment developments have the potential to reshape, retail commerce, not only by enabling consumers to buy things through their mobile

devices and perhaps encouraging them to buy more, but by expanding how businesses accept payments for goods and services.

So it isn't surprising that some see the market on the verge of taking off, even in the United States, where wireless standards and interoperability are lagging.

Ericsson predicts that global m-commerce revenue will top \$120 billion by 2008. Meanwhile, market-research firm Celent Communications predicts that the value of mobile payments worldwide will grow at a 260-percent clip annually from 1999 to 2004, while the number of payments

will climb 186 percent--far outpacing the 96-percent growth in the number

of Net transactions during the same period.

Right now, mobile payment systems vary around the world in terms of

how payments are initiated, what sort of security or authentication process

is used, and how the payment is settled. In the U.S., a couple of different

schemes are emerging.

There is the "beamed" payment, where payment instructions, usually authorized by a user's password or personal identification number, are sent

by infrared from a wireless device to a payment terminal. This contactless

transaction would take the place of the swipe of a credit or debit card or

the exchange of cash and may be the first idea that comes to mind when you

think of "wirelessly" paying for goods or services.

Another, more popular, version of mobile purchasing is more akin to

buying on the fixed Net. A customer would access a retailer's site through

their Web-enabled phone or personal digital assistant and find the item they want to purchase. Similarly, the customer might be served an advertisement or coupon for a particular item that he or she can buy automatically, click a "pay" button and enter either a password, a PIN number, or some other form of authentication, such as a voice command.

The payment is either pulled from a pre-authorized account at the provider or

served from a electronic wallet sitting on the device or on a server at the

bank or carrier. Most wireless payment methods under development focus on a

server-based wallet, which developers think is more secure.

Other methods call for the charges to be added to a user's mobile phone bill or require the use of a chip card to store payment information

or a digital certificate that secures the transaction. But so far, these methods have garnered scant attention in the U.S., where smart card use is

limited and consumers are not used to having other charges attached to their phone bills.

Most U.S.-based players only recently began getting serious about

implementing a wireless-payments infrastructure. According to Trevor Healy, vice president and general manager for m-commerce for Trintech Group PLC, an electronic payments company based in Ireland that has worked with banks and carriers on both sides of the Atlantic, "They've only just woken up, but it's going to accelerate very quickly."

Last summer in Boulder, Colo., NextCard and SkyGo embarked on one of the first U.S. m-commerce and advertising tests, sending national and local advertising and branding messages to the WAP-enabled phones of 1,000 participants over a period of four months. Consumers could buy wirelessly from an online merchant or with local advertisers not outfitted for wireless payment. They were enticed to come in for sales or to use virtual coupons on their cell phones.

And last May, wireless service provider Aether Systems Inc. made a deal with First Data Corp., a third-party processor of credit card transactions, to develop wireless-payment applications. Rod Stambaugh, general manager for the wireless commerce group at Aether, said the company will launch m-wallet and shopping services in the second quarter. Mobile users will be able to access a bank- or carrier-branded portal where they can shop.

Like most developers, Aether features a system with a server-based wallet. All the customer's payment information is sitting at the bank or at the carrier's host. When a consumer wants to pay for something, the wallet steps in and prefills the purchase order and payment information.

"It's really very similar to the Internet and probably even easier," Stambaugh says.

Aether is also developing a peer-to-peer payment clearinghouse that will enable a payment sent from one system to be received by another, without the need for separate accounts with each system.

P2P payments leader PayPal Inc. has yet to see nearly as much interest in its wireless products as in its fixed Net payment system, however. According to spokesman Vincent Sollitto, by early January, only 10,000 customers had used PayPal's wireless product for WAP - and Internet-enabled phones, which the company released last June, compared with 5.6 million customers for its wired Internet product.

The low adoption rate may have a lot to do with the limited number of Internet-ready phones and the limitations of PayPal's wireless service itself. Customers can only send money, request payments, and check balances using a wireless device. They still have to use a PC to open or fund accounts.

While wireless payments on the whole have yet to take the U.S. by storm, other quasiwireless systems like Confinity's Palm application have

captured a following. The principle of these systems is largely the same,

but the execution differs from emerging wireless payments, primarily because they most often utilize a radio frequency to signal a transaction

and don't transact in real time. For example, using the Mobil Speed-pass, a

customer can wave a key fob--shaped token past a terminal at the gas pump

to pay for a tank of gas in a hurry. Many transit authorities have also instituted contactless payment systems similar to New Jersey and New York's

EZ Pass: A commuter mounts a small plastic device to their inner windshield, which signals the toll booth as the car passes through and debits the user's account for the amount of the toll.

Palm has thrown its own hat in the m-commerce ring. In January, the PDA manufacturer entered into a deal with VeriFone, the Hewlett-Packard Co.

payments unit, to enable payments through the Palm. Instead of swiping a

credit card at the checkout counter of a store, Palm users would beam their

payment authorization to a terminal secured by elliptic curve technology from Certicom Corp.; the purchase would be debited from the customer's wallet on the bank's or carrier's server.

The companies began piloting the system in Spain in early January with 100 participants and ten merchants; a larger pilot in California with

1,000 users was planned for February. If all goes well, says Jean-Marc Sarat, senior director of corporate development for Palm, users will be able to download the application widely as early as the third quarter of

2001, and payment capabilities will be built in to future versions of the

Palm Pilot and offered to other Palm OS licensees.

Sarat thinks Palm's loyal user base will embrace the PDA for mobile

payments because its form factor will display receipts and-coupons more clearly. "It's really painful to enter all that information on a phone (keypad)," he says. "The phone is only the communications link."

Other companies seem to agree that the Palm offers benefits in mobile payment, on the merchant's end as well as the consumer's. In November, EPX, a payment-services company, debuted PDA Pay, which integrated the company's payment-processing system into a PalmVIX, making

it a handheld transaction terminal. The device has a built-in card swipe and a cradle that fits on the device like a sleeve.

PDA Pay can enable mobile workers to run a credit card payment while

they're out in the field. "The way we see it," says Maureen Loftus, vice president of business development and strategy for EPX, "this is an application people want today, not some vision someone has."

Similarly, using Palms to accept wireless transactions plays into

WIRCA's strategy. The Overland Park, Mo., wireless-payments network was launched more than a year ago to develop m-commerce, and it is conducting a pilot in the Kansas City area. Customers can pay for a dinner out or a tank

of gas using their cell phones, while the seller uses a Palm VII to wirelessly plug into the system to verify their transactions.

WIRCA chief executive officer Howard Gerson plans to expand his network in the second quarter and add capabilities to allow for person-to-person wireless payment. He thinks his service will be handy for

those who "forget their wallets but never forget their phones."

Many wireless-payments developers say that while the phone and the PDA can work when it comes to making wireless payments, the ideal device for m-commerce is still to come: one that would combine the best of both platforms.

Emerging technologies like the breathlessly awaited Bluetooth, the highly touted shortwave wireless technology, also have great potential to shake up the nascent wireless-payments space. Executives from Aether, EPX

and Palm all say they plan to embrace Bluetooth for their payments transmissions as soon as the technology is market ready.

The more significant change in the new wireless payments landscape may be in who processes and controls those payments. It is no secret that non-bank payment processors and other unconventional new players have gradually gained ground in the payments industry over the years. The advent of mobile payments could exacerbate this trend by putting more power in the hands of the carriers.

"(There's) tension between carriers and banks," says John Fallon, director of wireless for Baltimore Technologies PLC. "(Carriers) want to get more involved in the transactions rather than being a bit pipe for transactions. They want to be able to provide a choice of payment options or authenticate transactions."

Kevin Ritschel, senior product manager of emerging markets for VeriFone, thinks greater involvement from the carriers is inevitable.

"Any time a new gateway comes along, there's a new gatekeeper wanting a toll," he says. "Carriers are seeing this as a way to offset lowering fees on airtime. It's clearly the opportunity that a lot of carriers have seen, and that a lot of financial institutions see as a very real threat"

An interesting example of this is Finnish telecommunications operator Sonera Corp., which has been conducting a pilot of its own Mobile

Pay service for more than a year and a half in Finland and Sweden without the involvement of banks. Users can buy vending-machine products, fast food, or even car washes using their WAP- and SMS-enabled phones, says

hours to prepare a complete bid list. Once the floor plans, elevations and budget are approved, we can complete the plans with engineering, Title 24, etc., ready for the building department.

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These are the headlines and first paragraphs of each story, in order:

Newsbytes, pN/A

March 27, 1997

Language: English Record Type: Fulltext

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TEXT:

1. California Suicide Group Ran Web Programming Service -- By Martyn Williams. The deaths of at least 39 people in Rancho Santa Fe, California, in what appears to be a mass suicide, has a connection with the Internet.

The group were apparently members of a religious group, World Wide Higher Source, and that they financed operations by running a Web site design and programming service, "Higher Source Contract Services."

2. Update - California Suicide Group Ran Web Programming Service -- By Martyn Williams. The deaths of at least 39 people in Rancho Santa Fe, California, in what appears to be a mass suicide, has a connection with the Internet. The group were apparently members of a religious group, World Wide Higher Source, and that they financed operations by running a Web site design and programming service, "Higher Source Contract Services."

3. Personnel Update - Tandem Computers Inc -- REPEAT/By Ian Stokell.

Tandem Computers Inc. [NYSE:TDM] says that Gary Stimac will join its board of directors.

4. Personnel Update - Merisel Inc -- REPEAT/By Ian Stokell. Merisel Inc. [NASDAQ:MSEL] has appointed Jay Kerutis to the position of vice president of retail.

5. Personnel Update - CitySearch -- REPEAT/By Ian Stokell. CitySearch

has announced the addition of two online editors to its management team. They will reportedly lead the development of CitySearch's original editorial content delivered through its local online services.

6. Networking Roundup - Seiko Picks Emulex For Network Printer Card

--

REPEAT/By Ian Stokell. Printers are increasingly being offered with built-in networking capabilities for integrating into local area networks.

Along those lines, network printer company Emulex Corp. [NASDAQ: EMLX] says

it has been selected by Seiko Epson Corp. to provide Ethernet network cards

for that company's network ready printers.

7. Networking Roundup - RDC Wireless LAN Adapter Tops Study --

REPEAT/By Ian Stokell. Wireless connections to corporate local area networks (LANs) are gaining in popularity. Now RDC Networks Inc. claims that the results of independent testing by The Tolly Group show the RDC PortLAN Wireless LAN Adapter better than competitive products.

8. Networking Roundup - Bus-Tech & IBM Team On Intranet-System/390

--

REPEAT/By Ian Stokell. Connectivity between different platforms is an important part of any corporate network. Bus-Tech Inc. says it will combine

its high-speed channel technology with IBM's Communications Server for NT,

which will give users channel-speed integration between their intranets and

IBM System/390s.

9. AdTech Conference - Exhibitors Fill Show With Wares -- REPEAT/By Bob Woods. More than 60 exhibitors with products and services ranging from

e-mail publishers to animated World Wide Web advertisement systems filled

some 20,000 feet of space at this week's AdTech '97 Conference in Chicago.

10. Reference Design Promotes StrongArm Chip, NCI Software --

REPEAT/By Grant Buckler. Digital Equipment Corp. [NYSE:DEC] and Oracle Corp. [NASDAQ:ORCL] subsidiary Network Computer Inc. (NCI) have introduced

a reference design for manufacturers who want to build network computers (NCs) using DEC's StrongArm microprocessor and NCI's NC Access software.

11. World Trade Organization To Eliminate Tech Tariffs -- REPEAT/By Bill Pietrucha. It's the end of information tariffs as we know it.

Members

of the World Trade Organization has approved the Information Technology Agreement (ITA), which will eliminate tariffs for 90 percent of the world's

trade volume in information technology products.

12. AdTech Conference - Broadband Equals Money -- REPEAT/By Bob Woods.

When it comes to selling on the World Wide Web and other technologies, the

old quote "the medium is the message" can translate to "the medium is the

money," especially when faster broadband lines from sources like cable television networks are used, said an executive with the Home (AtHome) Network.

13. Postal Service Taps MCI For Managed Network Service --

REPEAT/By

Bill Pietrucha. The US Postal Service (USPS) is making MCI its telephone

company for the next eleven years. The USPS awarded MCI its Managed Network Services (MNS) contract yesterday, which will allow the Postal Service to obtain a variety of telecommunications services.

14. IBM/Netscape/Oracle/Sun Offer Smart Card Standard -- REPEAT/By Richard Bowers. IBM [NYSE:IBM], Netscape Communications Corp. [NASDAQ:NSCP], Oracle's [NASDAQ:ORCL] Network Computer Inc., and Sun Microsystems Inc. [NASDAQ:SUNW] held a joint press conference yesterday to announce the adoption of the first NC (network computer) standard for smart cards, called the OpenCard Framework.

15. Internet Update -- By Martyn Williams. This is a roundup of new and updated resources and services on the global Internet, including: Internet live - NCAA Men's & Women's Volleyball; Internet live - NCAA Hockey Championship Tournament; get your Passport 2 for free; protection for mailing lists; school activity for Earth Day; the best Australian information source; politics in Costa Rica; inside search engines; more movies than you could ever watch; more on client server computing; across America - Alabama, Florida, Idaho; around the world - Canada.

16. Japanese Quake Halts Sony Plant Output -- By Martyn Williams. A strong earthquake that hit the southern Japanese island of Kyushu on Wednesday evening has forced Sony Corporation [TOKYO:6758] [NYSE:SNE] to halt output at a factory on the island. The factory, which produces liquid crystal displays and semiconductors, is expected to be back on line Friday after slight damage to machinery is repaired.

17. DDI & Ido To Jointly Launch CDMA In Japan -- By Martyn Williams. Executives from two Japanese cellular telephone networks, DDI Cellular and Nippon Ido Tsushin (Ido), have announced plans to work together to introduce a new cellular telephone network in Japan. The new network will be the first based on the new CDMA (Code Division Multiple Access) technology and a replacement to the company's Japan-developed PDC-based system.

18. DirecPC Japan Awards Satellite Center Contract -- By Martyn Williams. Mitsubishi Corporation [TOKYO:8058] has awarded a US\$500,000 contract for a satellite earth station for the DirecPC satellite Internet service to California Microwave Inc. [NASDAQ:CMIC]. The company's Satellite Transmission Systems group won the contract for the station, expected to be completed in July.

19. Japan 1996 PC Server Shipments Jump 70% -- By Martyn Williams. Shipments of personal computer servers jumped 70.2 percent in 1996, according to figures released by Dataquest. Most of the growth was as a result of strong demand for Windows NT-based servers.

20. NTT Establishes Telecom Subsidiaries In Asia -- By Martyn Williams. Nippon Telegraph and Telephone Corporation [TOKYO:9432] [NYSE:NTT], faced with a hold on its American license application while the

US and Japanese governments argue trade, is moving into Asia sooner than originally planned. As a start to this, the company has established wholly owned subsidiaries in Hong Kong and Singapore, and a joint venture in the Philippines.

21. Wireless Cable TV Tech to Be Introduced in Korea -- What do you call a cable TV system which transmits programs wireless? The cable TV is so-called as it is based on cables in contrast with the wireless over-the-air TV broadcast.

22. Earnings Update - Dialogic's Revenue Estimate Down -- By Bob Woods. Dialogic Corp. [NASDAQ:DLGC] said it expects revenues and earnings for the first quarter to fall below analysts' forecasts.

23. Earnings Update - Acer's Net Profit Drops -- By Bob Woods. Acer Inc. [TW:2306] said its net profit dropped to T\$3.06 million from T\$5.5 million in the January through December 1996 period. Turnover also dropped to T\$57.5 million from T\$62.5 million.

24. PSN's Xpress Connection To Be Used Throughout Indonesia -- By Bob Woods. PT Pasifik Satelit Nusantara [NASDAQ:PSNRY] (PSN), which claims to be Indonesia's first private satellite communications company, said it inaugurated its Xpress Connection Telecommunications service for the country.

25. SBE Gets \$1.4 Million High Speed Boards Contract -- By Bob Woods. SBE Inc. [NASDAQ:SBEI] reported it received a \$1.4 million order for its intelligent communications controllers from an unnamed worldwide telecommunications equipment provider.

26. Time Warner Files For Columbus Phone Services -- By Bob Woods. Time Warner's [NYSE:TWX] cable television unit said it filed rate tariffs with the Public Utilities Commission of Ohio (PUCO) to offer local phone services to customers via its cable network.

27. AT&T To Lay Off 800 -- By Bob Woods. AT&T [NYSE:T] said it plans to lay off 800 people, mostly in management positions, at its Markets Division in Bernards, Bridgewater, and South Plainfield, New Jersey.

28. Zonathan '97 - Killer Intranet, Internet Applications -- By Jacqueline Emigh. Public and private World Wide Web sites meet different end user needs, and require different kinds of applications, agreed officials of a newspaper chain, a semiconductor manufacturer, and a Swiss bank, during a session at Zonathon '97 called "Killer Apps."

29. Yahoo Offers Searching Plus 150,000 Categories -- By Patrick McKenna. People outside the computer industry often ask why Internet users need five or six different companies to search the World Wide Web. At Yahoo, the number one Internet search and navigation guide as rated by PCMeter, searching is one part of a system which has more than 150,000 categories of embedded information.

30. Earnings Update - Intel Increases Stock Buyback -- By Bob Woods. Intel Corp. [NASDAQ:INTC] said its board of directors has approved an

increase of up to 30 million shares in the company's common stock repurchase program.

31. Corel Pleased With WordPerfect, Discusses Hardware Spin-Off -- By Grant Buckler. In a conference call with industry analysts and reporters Wednesday, senior officials at Corel Corp. [TSE:COS] [NASDAQ:COSFF] revealed a few more details of their plan to spin-off a hardware company. They also professed themselves pleased with their first year as the new owners of WordPerfect and other software acquired from Novell Inc. early in 1996.

32. Air Force Tests Smart Cards For Medical Records -- By Bill Pietrucha. The US Air Force is testing smart cards as possible portable patient records for both military personnel and civilian dependents. The field test, which began today at Keesler Medical Center at the Keesler Air Force Base in Mississippi, is using optical memory cards made by Drexler Technology Corp. [NASDAQ:DRXR].

33. President Clinton's Encryption Bandwagon Hitting Ruts -- By Bill Pietrucha. The Clinton Administration's continuing efforts to control data encryption are facing mounting opposition both here and abroad.

34. Acacia Networks Contracts With INS For European Sales -- Acacia Networks of Boston, Massachusetts, has announced plans to team up with the INS Group, a UK-based high technology market development specialist, on marketing the company's products in the Europe, Middle East, and Africa regions.

35. UK - Orange Unveils Orange Link Cellular Business Service -- By Steve Gold. Orange, one of the UK's four digital cellular networks, has launched the Orange Link service, allowing business customers to have a direct connection into the Orange network.

36. UK Inbound Mobile Phone Call Charges Set To Tumble -- By Steve Gold. Oftel, the British government appointed telecoms watchdog, has issued a consultative document setting its conclusions on the price of calling cellular phones from fixed line networks. The conclusion is that call charges are too expensive, and, as a result, Don Cruikshank, Oftel's director general, has suggested that prices may fall by as much as a third.

37. BT Internet Offers Ultra Low-Cost Pricing Option In UK -- By Sylvia Dennis. British Telecom (BT) has announced it is introducing a very low-cost rate for its BT Internet service. Known as Plan 180, the deal costs UKP4.70 per month for up to three hours of access free.

38. Data Fellows Expands Encryption Product Line -- By Jim Mallory. Data Fellows has added a military-strength encryption program and a Macintosh version of its security software to its F-Secure product line.

39. Sweden - Ericsson Announces Major Job Shuffle -- By Sylvia Dennis. Ericsson has announced it is restructuring its production operations at its Noorpkping facility in Sweden. As a result the changes, as many as 1,300 staff could be laid off, although the company is working on creating as many as 3,000 new positions at its plants elsewhere in the country.

40. US Robotics UK Unveils Four New Remote Access Servers -- By Steve Gold. US Robotics' networking division has launched four new midrange remote access services. The units are claimed to handle 56k analog modem and ISDN (integrated service digital network) communications on every port.

41. Year 2000 Problem Necessitates System Replacement - Report -- By Sylvia Dennis. A report just out from Ovum concludes that the mainframe is still the most viable database server for large user numbers.

42. C-Dilla Technology Used In Banker's Encryption Almanac -- By Sylvia Dennis. C-Dilla has announced that its encryption technology has been used to encrypt the world's leading directory of international banks, the Banker's Almanac, and publish the print directory on a single CD-ROM disc.

43. Psion Discovers PDA Users Want Mobile Comms -- By Sylvia Dennis. Communications for the Psion Series 3a and 3c palmtop computers has just got faster and easier thanks to two new portable comms devices, the PCMCIA Card Modem Adapter and the Travel Modem, the latter of which is only available for 3c, owing to serial port limitations.

44. Compaq & Intel Work Towards PC Theatre Products -- By Bob Woods. Compaq Computer [NYSE:CPQ] and Intel Corp. [NASDAQ:INTC] said they and other electronics companies would work together to establish standards for a new "PC Theatre" category of products for the future convergence of personal computer and future audio and video technologies.

45. Microsoft Waives Fees To Banks -- By Richard Bowers. Microsoft Corp. [NASDAQ:MSFT] has announced the elimination of all user fees charged to financial institutions that offer customers online banking and bill payment services through Microsoft Money. Effective immediately, the elimination of fees applies to all current and future institutions that offer online services through Microsoft Money.

46. AdTech Conference - Playboy To Launch Pay Web Service -- By Bob Woods. In a few weeks, Playboy Enterprises [NYSE:PLA] will launch a new World Wide Web site that is expected to feature both a pay subscription and a pay-per-view area, Playboy Enterprises' Chairman and Chief Executive Officer (CEO) Christie Hefner disclosed to a conference audience in Chicago.

47. Intel Increases Stock Purchase Plans -- By Richard Bowers. Intel Corp.'s [NASDAQ:INTC] board of directors has approved an increase of up to 30 million shares in the company's common stock repurchase program. This request will add to the already authorized repurchase of 110 million shares, bringing the total authorization to 140 million shares.

48. Ellison Bashes Amelio While Mulling Offer -- By Patrick McKenna. According to news reports, Apple's [NASDAQ:AAPL] board of directors and chief executive officer (CEO), Gilbert Amelio, would be escorted out of

Apple headquarters, if Oracle [NASDAQ:ORCL] CEO Larry Ellison takes control of the famous computer company. He reportedly will not install his friend

and current Apple "consultant" to the CEO, Steven Jobs, as the new boss.

49. 46.8M Online Users, 31.6M Intenders -- By Jacqueline Emigh. A total of 46.8 million US residents or 23 percent of the nation's population

are currently using the Internet and/or commercial online services (OLS),

with another 31.8 million, or 16 percent, planning to move online in the future, according to survey results previewed by Intelliquiest today at Zona

Inc.'s Zonathon '97 conference for Internet vendors.

(19970327/Reported by Newsbytes News Network
<http://www.newsbytes.com>)

-strength encryption program and a Macintosh version of its security software to its F-Secure product line.

39. Sweden - Ericsson Announces Major Job Shuffle -- By Sylvia Dennis.

Ericsson ha

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Automation); TELC (Telecommunications)

Rachna Korhonen, U.S. sales director for Sonera Mobile Pay. Sonera processes the wireless payment for the "few thousand" users, who store their credit card information at the company.

The service charges a "small," undisclosed transaction fee to consumers and merchants, but Korhonen says that the 25 to 40 percent rise in the use of wireless payment-enabled services points up the success of the project so far. She adds that Sonera is looking to expand soon, offering services in Europe that would allow consumers to buy even more expensive goods, like airline tickets. Sonera is actively looking to license Mobile Pay in the U.S.

Operators aren't the only ones well positioned to take their place in wireless payments. With the help of Trintech's Payware, Korean electronics giant Samsung has created a "virtual credit card," an extension of its \$15.7 billion traditional credit card business, one of the biggest in Korea. Given the explosive growth of m-commerce in Asia, Samsung could become a huge force in wireless payments there.

Despite limitations, the wireless-payment infrastructure is likely to grow, fueled by the proliferation of mobile devices and consumers' ever-growing desire to buy things whenever and wherever they like.

Karen Epper Hoffman is an independent writer and industry analyst.

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A day in the life of the virtual builder. (computers in housing development) (includes related articles) (Advertisement: Computer Connection)

Professional Builder (1993), v60, n11, p62(9)

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ISSN: 1072-0561 LANGUAGE: English RECORD TYPE: Fulltext;

Abstract

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ABSTRACT: A scenario of a highly automated home built by a modern housing developer is described. The energy-efficient, intelligent home features

microprocessor-programmed elements such as motion detectors, water heaters, coffee makers, synthesized audio reports of E-mail messages, business news summaries, electronic newspapers, home business equipment, computer-aided design equipment and virtual reality systems for architectural plans.

TEXT:

Technology is changing by the minute. Just how will we be doing business in the next few years? Spend a day with the virtual Builder and see.

What is the future of computers and how will they be used? Bill Gates of Microsoft cast his company's goal in a bronze plaque studding the plaza of his corporate headquarters: "A computer on every desk of every home."

Indeed the advent of handy electronic access to everything and anything from the O.J. trial to on-line shopping is driving a consumer feeding frenzy in the personal computer market. There are, by some reports, 20-million people on line right now.

So many consumers, who have never used a computer, are rushing to purchase that tech support crews of major computer companies are being retooled to guide new users. Many of these new owners don't know one end of a printer cable from another. But they are ready to learn.

Though many more consumers will use their powerful machines to play popular graphics games like "DOOM" and chat on line than will use them for accounting, their use of computers is going to breed expectation. And just as the television forced all commercial videos to meet high production standards so will the ubiquitous in-home computer breed the expectation of 3-D presentation and virtual reality for any enterprise using them as a selling tool.

How will these rapid changes affect builders? The changes cannot be over estimated. They are truly of the magnitude brought about by the introduction of electricity and the advent of the telephone. Today, it's hard to even imagine a home without electricity or telephone service. Let alone sell one.

The information superhighway is here now and access is easy and cheap. Windows 95, the new Microsoft operating platform, now expected to arrive in August, includes built-in programs to access that highway. Microsoft will offer its own service company. IBM's OS/2 Warp already delivers this integrated capability. Already access to the information superhighway costs only as much as monthly telephone or cable television service, and there are more on-line service providers than long-distance telephone service vendors. And even some of these are merging into multi-service utilities.

In our last issue of the Computer Connection we spoke with experts

throughout the country about the current state of computer use among builders. We also shared the results of NAHB's 1994 Builder Computer Study.

This time we will take you along on a journey that almost is - a day in the life of a virtual builder who will, in very short order, be you.

Everything we describe is available today (for a price) somewhere in the country.

So let's start at home. Of course, our virtual builder lives in an energy efficient, intelligent home that she or he built.

Facing an early start, he programmed the home to wake up at 5:30 a.m.

As we enter the home to begin our day of observation, kitchen and bathroom

lights are ramping up to 50 percent light intensity and music has started

to play on the whole-house surround system. Coffee is perking and the plumbing system has the shower water heated to 101 degrees and ready to go,

once sensors pick up the movement of our builder into the room, Oh, and the

mirror-heater has turned on to prevent condensation.

As our builder enters the master bathroom, he hears the computer's synthesized voice announce the temperature inside the house and outdoors and delivers a local and job site weather report, as well as the status of

the home security system. It also announces that he has several E-mail messages.

As he brushes his teeth, the computer reads the time and duration of

each message and replays the recorded messages aloud. One is from a client

scheduled to come for an early a.m. meeting confirming their arrival time.

A few are queries for information from an advertisement on the Internet.

With these latter messages, he responds by telling the computer to E-mail information packages to those potential buyers. The package includes

an electronic prequalifier that will, with recipient authorization, allow

access to financial and credit reports that pre-qualify the buyer, he also

tells the computer to insert a schedule reminder to follow up the packages

with a video-phone call in three days (in which both parties can see themselves and the person they are talking to via the use of a camera and

speakers attached to the PC.)

He instructs the computer to scan his daily schedule and based on the

schedule and the weather print out an appropriate wardrobe.

With no emergencies pending he finishes dressing and heads into the kitchen for breakfast. At the kitchen table, our builder pulls forward a television screen and pulls up the daily paper. He then pulls up a personalized news summary culled from a variety of on-line services, including the Associated Press and Reuters. The Highlighted words within

the features, both locally written and those gathered from nationwide new services, lead to more information about the feature - everything from the transcripts of speeches and reports the reporters used in compiling a report story to financial tables and annual reports in the money section plus "links" to other points on the Internet for more information on the subject.

The "paper" reports on a fire raging in the northwest and some recent court decisions that give the feeling that lumber prices are about to rise again. Our builder quickly scans the builders' on-line forums and chat rooms to see what the rest of the market thinks - about half think lumber's going up, and some 25 percent are switching to other framing systems such as steel. He makes a note to E-mail the purchase order for the lumber for that new custom home today to lock in the price. And to modem the plan he will be working on today over to his steel-framing sub to bid out the new job in steel.

Having perused the "paper" and keyed in a reminder to order the lumber and steel specs, he heads to his home office. A few buttons on the touch screen re-set the house to an "unoccupied" mode that conserves energy and arms the security system.

A combination of motion detectors and timers has turned off lights and appliances in the main house and has awakened the home office. The lights and music are on as he walks into the two-room suite attached to the main house.

He dons his wireless 3-D video headset/telephone and uses voice recognition to command the computer to call the architect of one potential client who delivered a set of concepts and renderings yesterday. The architect quickly E-mails detailed plan information and our builder inserts the information via "drag and drop" into his computer estimating system.

In minutes, the computer spews out bills of materials and a list of potential subs. He E-mails the relevant specs to the appropriate subs. Though only a few are on line, his on-line service provider automatically FAXes the rest.

In just a few hours, he will E-mail his bid to the clients who are choosing among three builders' estimates. Our builder is confident, because he knows this electronic bid will be both the first and most complete that these potential customers receive - the one they use to measure the competence and professionalism of the competition.

It's still a few minutes before the new clients will arrive. Our

builder E-mails another client's plans to the building inspector for approval. Because this is a custom-home in an area with height limitations and architectural restrictions, the transmission includes a three-dimensional presentation of the home as it will appear from a distance, driving up to the site and from other homes in the subdivision, and includes a walk-through inside the home fully colorized with views.

Right on time, 8:00 a.m., the new clients show up. These clients want our builder to both design and build their home. Since they know he is electronically literate, they have brought along cam-corder tapes of homes they like and features they wish to incorporate.

They go immediately to the computer conference table. First our builder gets a sense of the size and living attributes of their present home. What features work for them now? What would they change?

Our builder offers them the option of choosing a house plan available for a modest fee via CD-Rom or pulled off a service on the Internet, but these clients want a truly custom home. Our builder breaks the design process into a series of design modules. What do they want in the master suite module, or the kitchen? They quickly scan in views of the site from the digital cam-corder tapes that indicate topography and vegetation. Since the clients included surveyors poles as they panned the site, its a simple matter to generate a full topological map of the site verified through satellite imagery pulled down from an on-line provider. Our builder also links the topo with the county's geological information system to add accurate elevations and survey boundaries.

Based on local code requirements, our builder quickly sets the parameters for the site's allowable building envelope and flags some trees the owners wish to save which may effect the home design.

He has also incorporated seasonal sunrise and sunset times and solar loads to orient windows and optimize energy balance.

Grouped around the computer screen, the clients and builder outline the house by use modules, then refine the design. Soon, they are walking through several alternative new homes right on the computer.

They can "walk around" the home's exterior, peer into windows from the outside, walk in the front door, look up at the ceiling, look out the windows at the views and chart the sun's path through windows at different times of the year.

Using images from the digital cam-corder, they move the owners' furniture and art work into place. It takes two or three of these sessions to totally complete the design. At the last session, they can even add and "age" landscaping. Based on site information and climate data already in the computer, the owners can not only choose the plants that will do well around their new home (the landscape program will let them know if a

particular species will work or not), but also see them as they will look

at maturity. Realizing that several of the plants they like are slow growers and will take a long time to mature, the clients decide to purchase

larger plant specimens of the slow growers.

Let's try this with the virtual reality glasses, our builder says.

In

moments builder and clients enter the conceptual home to walk through corridors, to check out the kitchen-cabinet layout and admire the sunset views by the pool.

Shall we print this one? Our builder asks.

He then prints to videotape the 3-D walkthrough and sends the clients

home to think about their dream home. It is only 10:30 a.m. Two more sessions like this and he will have complete estimates, specifications, and

contracts in hand and the clients will really feel they have been a part of

the total design process.

Next our builder calls one of the job sites. The super has just received an order from the lumber yard and is checking the inventory against the purchase order using bar codes and a pen-based computer, a personal digital assistant (PDA). Inventory is a snap - the original purchase order sent via E-mail to the lumberyard's computer spelled out every-item in quantity that was based on the job. The super has that same

purchase order accessible in the pen-based computer.

The super has also bar coded the electrical and plumbing fixtures and

appliances with anti-theft tags. Now part of the home's database, the information on model type and its care will be part of the homeowner's dream book complete with digital progress photos and a maintenance binder

all printed out in time for closing. In the word-of-mouth custom home market, our builder gets 50 percent of business from direct referrals, 30

percent from those touring the model and the remaining 20 percent from electronic advertising.

The super has also logged in weather conditions, which subs are on site and is ticking off the progress on the construction schedule, all in

the pen-based computer. The order is accurate and everything is on schedule. The super E-mails the office authorizing payments to the lumberyard, with electronic "carbon copy" to the builder's office.

The super also accesses an OSHA bulletin board which lists the latest

rules and regulations. The super carefully logs the use of safety equipment, reminds one of the subs to wear a hard hat and prints up several

notices about new regulations to post on the job site.

A review of the project schedule for that home reminds our builder that several of the subs are due payment today. Our builder tele-connects

with his office manager (who works in her own home office), who then electronically makes payment from that job's escrow account at the bank to

the appropriate subs. For most the bank simply direct deposits the sums to their accounts. The office manager notes the receipts and the times and E-mails the subs notification of payment. She also prepares the weekly variance sheets which compare each job's progress with its budget and schedule.

At 11:00 a.m. the next client arrives. These customers have already been through the design process - now it's time to help them get their construction loan and sign the contract to actually build their home.

Our builder tells them, that based on reports in the morning paper and some peer review he thinks lumber prices may rise and change the cost of building their home. He says, that with their permission, he would like to rebid the home using steel framing rather than lumber. They agree to the change. He then modems the framing plan to the local steel framing sub who quickly bids it out while the clients continue with the meeting.

At this point they all sit around the computer conference table and "call" the banker to tele-conference. The banker helps them fill out the electronic loan application. He verifies employment and credit records electronically. At 11:30 a.m., the banker then congratulates them on their loan approval and sets up the escrow account for construction payouts. Banker, builder and clients review the schedule, bids and estimates all prepared in the computer.

The steel-framing sub calls back with his bid and a firm price; our builder and the owners change the plans to reflect the material change.

How long did this take the old fashioned way, the clients ask? Well a minimum of several weeks for final loan approval, says the banker. Often it takes a month or more to design a house with pencil and paper and another 40 to 60 hours to do estimates and take-offs without a computer, our builder says. Of course the computer saves time from this point on as well, since all of the scheduling, tracking and accounting procedures are now in the computer tied to this job.

Wow, this is our third meeting. We've spent a total of five hours with you designing and specing the house. We have three-dimensional pictures and video tapes of how it will actually look, and now we also have loan approval - that's amazing.

Yes, our builder says, the process is fast, but I schedule appointments a week apart so that you don't feel too rushed in the decision making process. We could actually go through the whole process in less than a week, but I think you need time to digest the information and be sure the house looks like and works as well as you really want.

When these clients leave, our builder checks the progress of the six

homes currently under construction. Double-checking ensures that there are no conflicts created by adding the new home to the schedule. Part of the computerized estimating process is to send spec lists to subs and to make sure they are available during the appropriate time frame. The program tracks on-time performance and flags subs whose performance or timing slows the job down.

Our builder also has programmed a time cushion for inevitable delays due to weather, illness or delays in materials acquisition and delivery. With computerized scheduling, delays happen less often than they used to, but our builder cannot control the weather and feels that it is better to deliver a house a little early rather than late. (Though even weather trends can be factored into the construction schedule using on-line weather-service data).

Next, it's time to launch the new model home in a prestigious subdivision. The customized model has been fully furnished, and our builder is hosting a catered luncheon for prospective clients and Realtors.

He found the caterer and approved the menu through the Internet, but taste-tested food samples before sealing the deal. The model also allows buyers to taste test. Virtual reality is not hands-on reality and the model still gives potential buyers a place to touch the product.

Our builder grabs the car keys and taps the "goodbye" mode on the touch-screen. The temperature adjusts, the music and lights turn off.

As driveway sensors respond to the car's departure, the home and office security system alarms are set and calls are transferred to the office manager's home office. As our builder drives to the model, he reviews more E-mail and voice messages. He then returns phone calls using a voice activated dialer and dictates E-mail responses.

At the model, our builder takes digital photographs of the model. Everything in the model has been bar-coded. A kiosk at the exit of the sales center near the garage works just like those in retail stores to catch those sticky-fingered model home visitors. Our builder used to plan on re-accessorizing quarterly and still does for breakage and wear. Monitoring the model proved that actual losses exceeded the cost of alarming for theft.

Other sensors at each entry to the project deter materials theft. Remote cameras installed at the project's gates scan license plates and sound an alarm if they sense the bar-coded merchandise inventory tags.

Everything is in place, the on-site sales person and the caterer are ready for guests. This sales office is networked to the main office computer. Semi-custom plans and virtual reality glasses allow interested buyers to tour other available models and to make extensive changes. But most are captivated by videotape walkthroughs on the 100-inch projection wall television in the sales center.

A video display in the sales center illustrates the home building

process. Thus our builder is able to make one model do the work of three or four at much lower cost.

Prospects use the pen-based computer to fill out "qualification cards" that instantly go into the computer database for tracking. Software in the sales center reminds the on-site sales person to send thank-yous and follow up information.

As the luncheon winds down, our builder checks his schedule on his personal digital assistant. He has a zoning meeting this evening.

Back at the office, he quickly prepares the evening's presentation. At issue is a small private subdivision on slightly smaller lots than the 3.3-acre zoning previously approved in the area. Nearby residents are worried about density, about cutting off their views and about preserving a riparian habitat.

Our builder superimposes the digitized land plan onto the plot plan of the new subdivision. Then he adds homes designed to fit area architectural guidelines and colors with the caveat that this is a custom home subdivision so that actual designs may vary from those shown.

At the zoning meeting, our builder shows the video tape and answers questions. At one point a suspicious homeowner points out that this virtual reality stuff looks really good, but how do we know that you are really going to build this way?

I'm glad you asked that, our builder says, and cues up the digital tape to show similar-size homes on digital tape in the design phase and how they actually look as built. The tape even includes interviews with the home owners.

After the meeting, several of the neighbors ask our builder how they go about buying one of the new homes.

It's 9:00 p.m. Our builder heads home. Phoning home, he tells the spa to heat up and starts some music. Driveway sensors recognize the sensor in our builder's car: the walk-way lights come on, the garage door opens. It's been just another day in the life of the virtual builder.

RELATED ARTICLE:

5:30 am

Home is programmed to wake-up. Kitchen and bathroom lights come on and coffee begins to perk.

6:00 am

As he brushes his teeth, the computer reads the time and duration of each E-mail message

7:00 am

At the kitchen table he pulls forward a television screen and pulls up

the daily paper.

8:00 am

Right on time, the new clients show up. Our builder will both design

and build their home. They head for the computer conference table.

8:15 am

He offers the clients the option of choosing a house plan available via CD-Rom or pulled off a service on the Internet. Our builder breaks the

design process into a series of design modules.

8:45 am

Grouped around the computer screen, the clients and builder are soon

"walking" through several new homes right on the computer.

9:15 am

Donning virtual reality glasses, the builder and clients enter the conceptual home to walk through, check out the kitchen cabinet layout and

admire sunset views by the pool.

10:30 am

Our builder prints to videotape the 3-D walkthrough and sends the clients home to think about their dream home.

10:50 am

Our builder is reminded that several of the subs are due payment. He tele-connects with his office manager who then electronically makes payment to the subs.

11:00 am

The next client arrives. It's time to help them get their construction loan and sign the contract to actually build their home.

11:30 am

They all sit around the computer conference table and "call" the banker to tele-conference. He verifies employment and credit records electronically. He then congratulates them on their loan approval.

12:00 pm

It's time to launch the new model home in a prestigious subdivision.

Our builder grabs the car keys and taps the "goodbye" mode on the screen.

The music and lights turn off.

12:30 pm

Everything at the model is in place. Semi-custom plans and virtual reality glasses allow interested buyers to tour other models and to make extensive changes.

1:00 pm

Prospects use the pen-based computer to fill out "qualification" forms that instantly go into the computer database for tracking.

2:30 pm

Our builder prepares for a zoning meeting later that evening. Nearby

residents of a subdivision going in are worried about density cutting off

their views and interfering with a riparian habitat.

4:00 pm

Builder superimposes the digitized land plan onto plot plan of the new subdivision. He adds homes designed to fit area architectural guidelines.

7:00 pm

At the zoning meeting, our builder shows the video tape and answers questions. He then shows similar-size homes on digital tape in the design phase and how they will actually look built.

9:00 pm

Our builder heads home. He phones home and tells the spa to heat up and starts music. Walkway lights come on, the garage door opens. Another day in the life of the virtual builder.

RELATED ARTICLE: Learn to Draw Plans On Your Computer In An Evening
Builder William Schulte had already looked at a few of the architectural drafting programs before he settled on Home Plan Pro.

Schulte, Schulte Construction Inc., Venice, Fla., found other programs to be too complex and too expensive. With only a few years of computer use under his belt, Schulte wanted design and drafting software that was affordable and easy to use. Schulte Construction builds five to six homes a year in the \$150,000 to \$200,000 price range.

With Home Plan Pro, Schulte found that it took him only one evening to learn the program.

Home Plan Pro automatically dimensions drawings. It is easy to create a complicated detail, save it and insert it where needed in the drawing. Schulte can also re-size, rotate and reverse drawings. And because it's now so easy to add doors, change floor plans and customize his homes, Schulte finds he is actually spending a little more time to design a better home.

Another added benefit is that it gives Schulte a professional-edge with his competition because homebuyers think his plans are more professional.

RELATED ARTICLE: CDCI's Profit Builder Saves Time And Money

Office manager Beth McKnight didn't know much about accounting when she joined Dick Ferrell Contracting Inc. (DFCI), Rock Hill, S.C. And what was in store for her could have been overwhelming.

But now, in just a few hours a day, she does all of the accounting for this remodeling business which generates a half million dollars in annual revenue. In fact, computerization has made the company so efficient that McKnight is one of only three employees including owner Dick Ferrell.

McKnight uses Profit Builder CFO, job cost and accounting software from CDCI Construction Data Control Inc. The company moved up from CDCI's Basic Builder two years ago to get Multi-user capability.

A two-day training workshop gave her the information she needed to start using the software. Since she started from ground zero, McKnight had

no bookkeeping background and didn't know the terminology such as debit, credits and general ledger. It didn't matter. Now she keeps track of accounts payable, payroll and job costs and produces weekly variance reports on each job.

Profit Builder can track up to 99 companies with up to 99 users in a LAN (local area network) environment. And Profit Builder tracks all kind of jobs. DFCI specializes in kitchens and bathroom remodeling but also does room additions and light commercial. Projects last year included a restaurant remodeling and an addition to a 125 year old house. Without Profit Builder, the company would need a production coordinator, a secretary and a bookkeeper. McKnight says computerization gives her plenty of time to do all three functions as office manager.

Ferrell sells the jobs and produces the budget on his computer in his home office. Then he brings the disk to McKnight, who integrates it into the job cost module. She keeps the report in a three- ring binder to track the progress of each job. Currently, McKnight is tracking eight jobs in various stages of completion.

April concluded DFCI's fiscal year. And this year was the second time McKnight prepared the year-end reports using Profit Builder. "This year, it was all very easy," she says.

RELATED ARTICLE: SolidBuilder Gives Homebuyers Three-Dimensional Views

I have a vision of changing the way we do business," says builder John Lindstrom, Lindstrom Builders, La Honda, Calif.

Homebuyers often find the home building process frustrating - slow, expensive - and they don't understand 2-D plans well enough to visualize the finished home.

After studying the market Lindstrom chose Computer Integrated Building's SolidBuilder. Why? "I needed computer-aided design that was easy-to-use and produced a complete materials and bidding list." SolidBuilder is a completely integrated 3-D solid modeling, building design

(CAD), estimating software. Now, when customers come in rather than it taking 40 to 80 hours to size up their plan or design one and cost it out,

Lindstrom schedules just a few sessions to design and bid the house.

In two-to three one-and-a-half-hour long appointments (billed at \$50

an hour) clients design their dream homes. They sit with Lindstrom at a 21-inch color monitor and design and "walk through" the home.

SolidBuilder's 3-D set up makes it easy for homebuyers to look out from inside the home to see views as they will be from their windows or from outside they can look into the home. They can even test fit their furniture, belongings and cabinets before the design is complete.

After each session, clients walk out with 8 1/2 x 11-inch print-outs to study at home. When the design is complete, it takes just two or three